

Claims

1. An outdoor microturbine assembly comprising:

an engine including a compressor providing a flow of compressed air; a recuperator preheating the flow of compressed air with a flow of hot waste gases; a combustor mixing the preheated flow of compressed air with a fuel and combusting the mixture to create a flow of products of combustion; a turbine element that rotates in response to the flow of products of combustion and exhausting the flow of hot waste gases into the recuperator; and a generator generating electricity in response to rotation of the turbine element;

a chassis supporting the engine and having side walls that define a reservoir; and

a drain pipe extending through an upper portion of one of the walls of the chassis at a drain level that is lower than the lowest portion of any of the side walls, the drain pipe angling downwardly to communicate with a bottom portion of the reservoir;

wherein any liquids having a specific gravity greater than that of water float on top of the collection of any water in the reservoir; and

wherein water from the bottom portion of the reservoir is forced out of the drain pipe upon the level of water and other liquids in the reservoir rising above the drain level.

2. The microturbine of claim 1, wherein the drain pipe includes a plate integrally formed with the end of the drain pipe extending through the side wall of the chassis, and wherein the plate is mounted to an exterior surface of the side wall of the chassis.

3. The microturbine of claim 1, wherein the end of the drain pipe extending through the side wall of the chassis includes a tapered pipe thread.
4. The microturbine of claim 3, further comprising a liquid pump interconnectable to the drain pipe through the tapered pipe thread and operable to pump substantially all liquids from the reservoir through the drain pipe.
5. The microturbine of claim 1, further comprising an enclosure mounted on the chassis and surrounding the engine; the enclosure including at least one access door that is selectively opened and closed to respectively provide and deny access to the engine; wherein the enclosure substantially prevents rain water from entering the enclosure and reaching the engine when the door is closed.
6. The microturbine of claim 1, wherein the engine uses a volume of high-density liquids having a specific gravity greater than that of water, and wherein the reservoir has a volumetric capacity at least equal to the volume of high-density liquids in the engine.
7. The microturbine of claim 1, wherein the engine uses a volume of lubricant and a volume of coolant each having a specific gravity greater than that of water, and wherein the reservoir has a volumetric capacity at least equal to the combined volumes of lubricant and coolant.

8. A method for controlling the drainage of liquids from a microturbine system, the method comprising the steps of:

providing an engine including a compressor providing a flow of compressed air; a recuperator preheating the flow of compressed air with a flow of hot waste gases; a combustor mixing the preheated flow of compressed air with a fuel and combusting the mixture to create a flow of products of combustion; a turbine element that rotates in response to the flow of products of combustion and exhausting the flow of hot waste gases into the recuperator; and a generator generating electricity in response to rotation of the turbine element;

providing a chassis having side walls that define a reservoir;
supporting the engine from underneath with the chassis;
collecting in the reservoir water and high-density liquids having a specific gravity greater than that of water;

permitting the high-density liquids to float on top of the water in the reservoir; and
removing water from the bottom portion of the reservoir upon the level of water and other liquids in the reservoir exceeding a preselected drain level, while retaining the high-density liquids in the reservoir.

9. The method of claim 8, wherein the providing a chassis step includes extending a drain pipe through an upper portion of one of the side walls of the chassis such that the drain pipe communicates between the environment external of the chassis and a bottom portion of the reservoir; and wherein the removing water step includes establishing as the drain level the level at which the drain pipe extends through the side wall, and permitting water to drain out of the drain pipe from the bottom of the reservoir.

10. The method of claim 9, wherein the drain pipe includes a plate integrally formed with the end of the drain pipe extending through the side wall of the chassis, and wherein the providing a chassis step includes mounting the plate to an exterior surface of the side wall of the chassis.

11. The method of claim 9, wherein the end of the drain pipe extending through the side wall of the chassis includes a tapered pipe thread, and wherein the removing water step includes interconnecting a pump to the drain pipe via the pipe threads and pumping water out of the chassis with the pump.

12. The method of claim 8, further comprising providing an enclosure, and surrounding the engine with the enclosure in a weather resistant fashion.

13. The method of claim 8, wherein the engine uses a volume of high density liquids having a specific gravity greater than that of water; and wherein the providing a chassis step includes defining the reservoir to have a volumetric capacity greater than the volume of high-density liquids in the engine.